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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/501,621 02/09/00 MILLS

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020736 IM22/0112  
FARKAS & MANELLI  
2000 M STREET NW SUITE 700  
WASHINGTON DC 20036-3307

EXAMINER

LANGEL, W

ART UNIT

PAPER NUMBER

1754

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

## Office Action Summary

Application No.

501621

Applicant(s)

Mills

Examiner

Zengel

Group Art Unit

1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

### Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

### Status

- ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

### Disposition of Claims

- ☒ Claim(s) 1-271 is/are pending in the application.
- Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- ☒ Claim(s) 1-271 is/are rejected.
- ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- ☐ Claim(s) \_\_\_\_\_ are subject to restriction or election requirement.

### Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - ☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been received.
  - ☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.
  - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_
- ☒ Notice of References Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other \_\_\_\_\_

Office Action Summary

35 U.S.C. § 112 PARAGRAPH 2 REJECTION

Claims 1-271 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is indefinite as to what would constitute an "increased binding energy hydrogen compound" (i.e., increased over what?); "a desired energy level"; "corresponding ordinary hydrogen species"; and "ordinary hydrogen species".

35 U.S.C. § 101 REJECTION

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-271 are rejected under 35 U.S.C. § 101 because the disclosed invention is inoperative and therefore lacks credible utility. All the claims recite a thermionic cathode doped with an "increased binding energy hydrogen species." Lines 15-27 on page 7 of applicant's specification define "increased binding energy hydrogen species" as a hydrogen species having a binding energy (i) greater than the binding energy of the corresponding ordinary hydrogen species, or (ii) greater than the binding energy of any hydrogen species for which the corresponding ordinary hydrogen species is unstable or is not observed because

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the ordinary hydrogen species' binding energy is less than thermal energies or is negative." The specification goes on to state on page 8, lines 1-5 that the increased binding energy hydrogen species are formed by reacting one or more hydrino atoms with one or more of an electron, hydrino atom, a compound containing at least one of said increased binding energy hydrogen species, and at least one other atom, molecule, or ion other than an increased binding energy hydrogen species. The paragraph bridging pages 5 and 6 of the specification defines "hydrino atom" or "hydrino" as "a hydrogen atom having the binding energy given in Eq.(1), wherein Eq.(1) recites

$$\text{Binding Energy} = \frac{13.6 \text{ eV}}{\left(\frac{1}{p}\right)^2}$$

where p is an integer greater than 1. A "hydrino atom" or "hydrino" would thus constitute a hydrogen atom having new energy states that are below the conventionally accepted ground state energy. An asserted utility would not be considered credible where a person of ordinary skill would consider the assertion to be incredible in view of contemporary knowledge and where the evidence offered by applicant does not counter what contemporary knowledge otherwise suggests. See MPEP § 2107.01. See the attached Appendix which shows the mathematical justification as to why conventional theory and experiment preclude the existence

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of hydrino atoms. It is emphasized that Endnote 1 of the Appendix shows that Schrodinger's wave equation mandates that the value of "n" (or  $1/p$ ) must be a positive integer having the values 1, 2, 3, and so on, and Endnote 5 shows that fractional values for "n" (or  $1/p$ ) are also impermissible in light of the Uncertainty Principle. The fourth full paragraph on page 19-14 of Bethe & Salpeter's Quantum Mechanics of One-and Two-Electron Atoms (Plenum Publishing Corporation, New York, 1977) states that the "ground state" of hydrogen has  $n = 1$ . It is clear from the foregoing that fractional values for "n" (or  $1/p$ ) cannot exist according to conventional scientific theories. Once the Patent and Trademark Office shows through scientific reasoning that an invention is inoperative, the burden then shifts to applicant to provide satisfactory evidence of operability of the invention. Newman v. Quigg, 877 F. 2d 1575, 11 USPQ 2d 1340 (Fed. Cir. 1989).

35 U.S.C. § 112 PARAGRAPH 1 REJECTION

Claims 1-271 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not enable one of ordinary skill in the art to make or use a "hydrino hydride ion", in that it would require undue

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experimentation to do so. Factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. In re Wands, 858 F. 2d 731, 737, 8 USPQ 2d 1400, 1404 (Fed. Cir. 1988). Each of these factors outlined in Wands will be addressed as to their relevance to the lack of enablement for applicant's claims.

Factor (1) The Quantity of Experimentation Necessary

Pages 41 and 42 of applicant's specification show that hydrino hydride was prepared during the electrolysis of an aqueous solution of  $K_2CO_3$  corresponding to the catalyst  $K^+/K^+$ . However, U.S. Patent 4,337,126 (Gilligan, III et al.) (newly cited) is evidence that the electrolysis of potassium carbonate results in the production of potassium hydroxide and  $CO_2$ . (See especially column 6, lines 13-47 of Gilligan, III et al.) Pages 53-59 of the specification disclose various methods to isolate and purify the increased binding energy hydrogen compounds formed in the hydride reactor. The paragraph bridging pages 56 and 57

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discloses how increased binding energy hydrogen compounds may be isolated from the electrolyte of a  $K_2CO_3$  electrolytic cell. However, there are not sufficient details of the electrolysis conditions set forth on pages 41 and 42 which would allow one to isolate and purify the increased binding energy hydrogen compounds by the procedures set forth in the paragraph bridging pages 56 and 57, rather than simply produce potassium hydroxide and  $CO_2$  by the potassium carbonate electrolysis, as shown by Gilligan, III et al. In this regard, the specification must teach one of ordinary skill in the art how to make and use the invention, and not simply how to direct one how to find out how to make and use for himself. In re Gardner, 427 F. 2d 786, 789, 166 USPQ 138, 141 (CCPA 1970).

Factor (2) The Amount of Direction or Guidance Presented

The direction or guidance provided in the specification is found on pages 40-58, and is insufficient for the same reasons given hereinbefore with respect to factor (1). In short, the amount of direction or guidance is insufficient, as it is seen from Gilligan, III et al. that electrolysis of potassium carbonate would be expected to simply result in the production of potassium hydroxide and  $CO_2$ .

Factor (3) The Presence or Absence of Working Examples

The specification contains, on pages 40-94, examples of methods for forming and identifying hydrino hydride ions, which are a type of "increased binding energy" hydrogen species as recited in applicant's claims. It is unclear however whether applicant has actually formed and identified the variously recited species, since the Examples are directed to the electrolysis of aqueous  $K_2CO_3$ , which would, as stated above, produce KOH and  $CO_2$ . The present examples are thus not considered to be working examples.

Factor (4) The Nature of the Invention

The scientific community has held the belief for decades that hydrogen cannot exist below the "ground state" ( $n = 1$ ). (See the reasoning presented hereinbefore with respect to the rejection under 35 U.S.C. § 101 for inoperability and the Appendix.) Accordingly the nature of the invention is such that it would be startling if it were operative, thus requiring greater detail than that found on pages 40-94 of the specification for one of ordinary skill in the art to make and use the claimed invention without undue experimentation. Applicant himself points out that the Mills theory predicts the existence of a previously unknown form of matter: hydrogen atoms and molecules having electrons of lower energy than the



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conventional "ground" state, called "hydrinos" and "dihydrinos", respectively, where each energy level corresponds to a fractional quantum number. (See the paragraph bridging pages 13 and 14 of R. L. Mills, The Grand Unified Theory of Classical Quantum Mechanics (Black Light Power, Inc., New Jersey, 1999)).

Factor (5) The State of the Prior Art

There appears to be no prior art showing hydrogen with a quantum number below 1, or even any prior art which would suggest that hydrogen with a quantum number below 1 could even exist in theory. The closest prior art to that disclosed in applicant's specification (see Gilligan, III et al., for example) show that hydrino hydride ions would not be formed. Also note the attached Appendix. Applicant himself points out that the Mills theory predicts the existence of a previously unknown form of matter: hydrogen atoms and molecules having electrons of lower energy than the conventional "ground" state, called "hydrinos" and "dihydrinos", respectively, where each energy level corresponds to a fractional quantum number. (See the paragraph bridging pages 13 and 14 of R. L. Mills, The Grand Unified Theory of Classical Quantum Mechanics (Black Light Power, Inc., New Jersey, 1999)).

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Factor (6) The Relative Skill of Those in the Art

Even the most highly skilled physicists were of the opinion that hydrogen cannot exist below the "ground state" ( $n = 1$ ).

Factor (7) The Predictability or Unpredictability of the Art

It would be most unpredictable that the hydrogen atom could exist below the "ground state" ( $n = 1$ ). (See the reasoning presented hereinbefore with respect to the rejection under 35 U.S.C. § 101 for inoperability and the Appendix.)

Factor (8) The Breadth of the Claims

The claims require the presence of "at least one increased binding energy hydrogen species." It has been shown hereinbefore with respect to the rejection under 35 U.S.C. § 101 for inoperability that the hydrino atom cannot exist.

Considering all of the above factors, one skilled in the art could not make and/or use the claimed invention without undue experimentation.

Any inquiry concerning this communication should be directed to Wayne A. Langel at telephone number (703) 308-0248.

WAL:cdc

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Serial No. 09/501,621

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*Wayne A. Fangel*  
WAYNE A. FANGEL  
ATTORNEY AT LAW  
GROUP 110